Room Temperature Test Stand

Johny
Berkeley Axion Works
University of California, Berkeley

DMR Collaboration Meeting, Aug 6th, 2024

Berkeley
UNIVERSITY OF CALIFORNIA

Goal

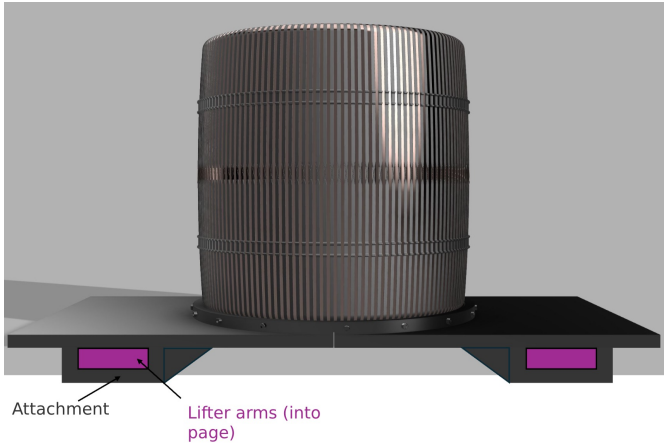
- To support magnet and other components during the assembly of the deceiver package (containing everything that is supported by the 4K ring)
- Also used to move assembly as needed

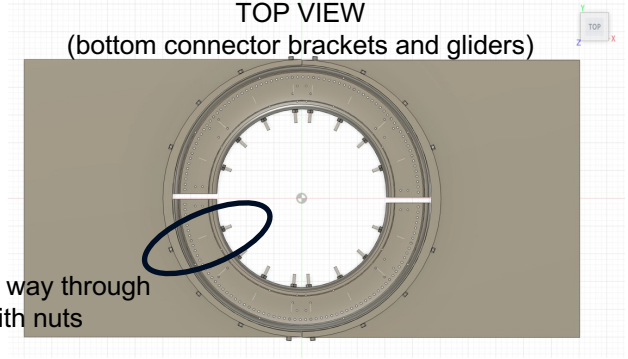
Assembly (see Chiara's talk)

1. Will receive mandrel attacked to 4K ring through the support legs from SSI
    - Will need to support magnet while we detach legs to mount 20 mK plate

Assembly (see Chiara's talk)

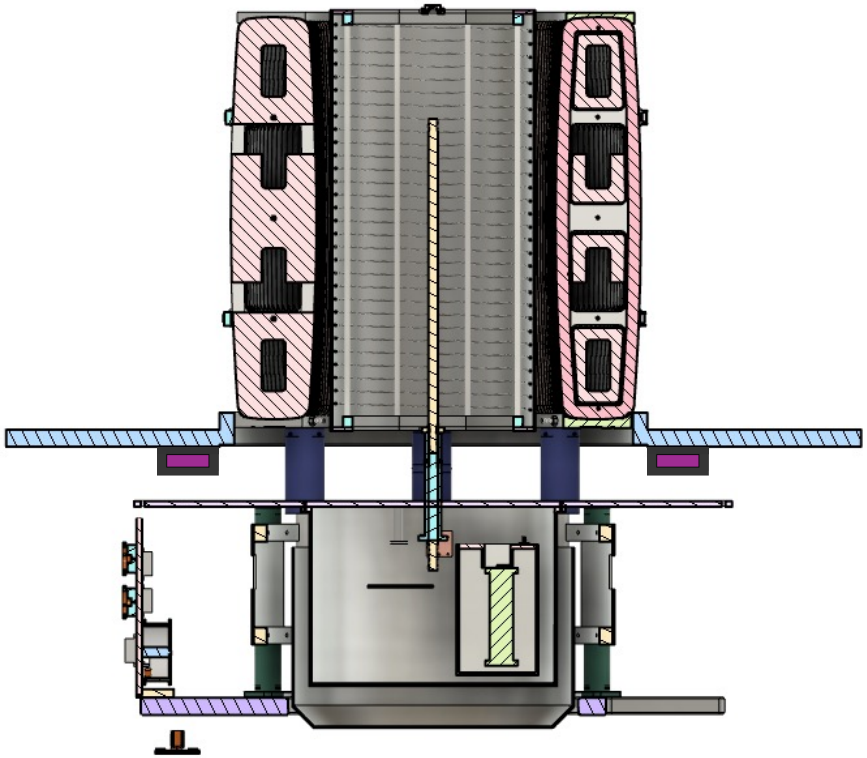
1. Will receive mandrel attacked to 4K ring through the support legs from SSI
   - Will need to support magnet while we detach legs to mount 20 mK plate
   - Done by supporting from bottom bracket with glider (Chiara)
   - Whole structure is then lifted and lowered with a commercial lifter





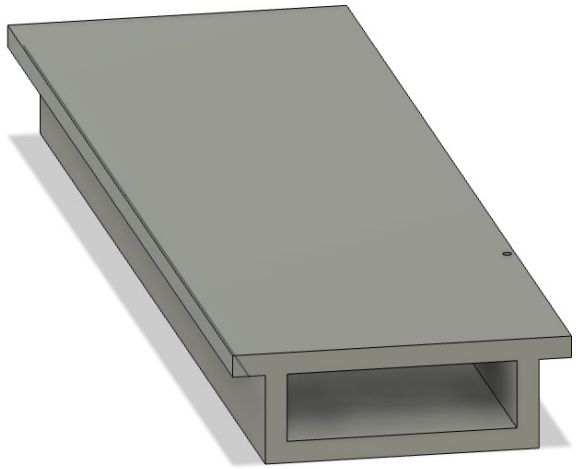
Assembly

2. Legs and 4 K plate are mounted
3. Glider can then be taken out, attachments are then placed on 4K ring
4. Whole assembly can then be moved from 4 K ring with lifter

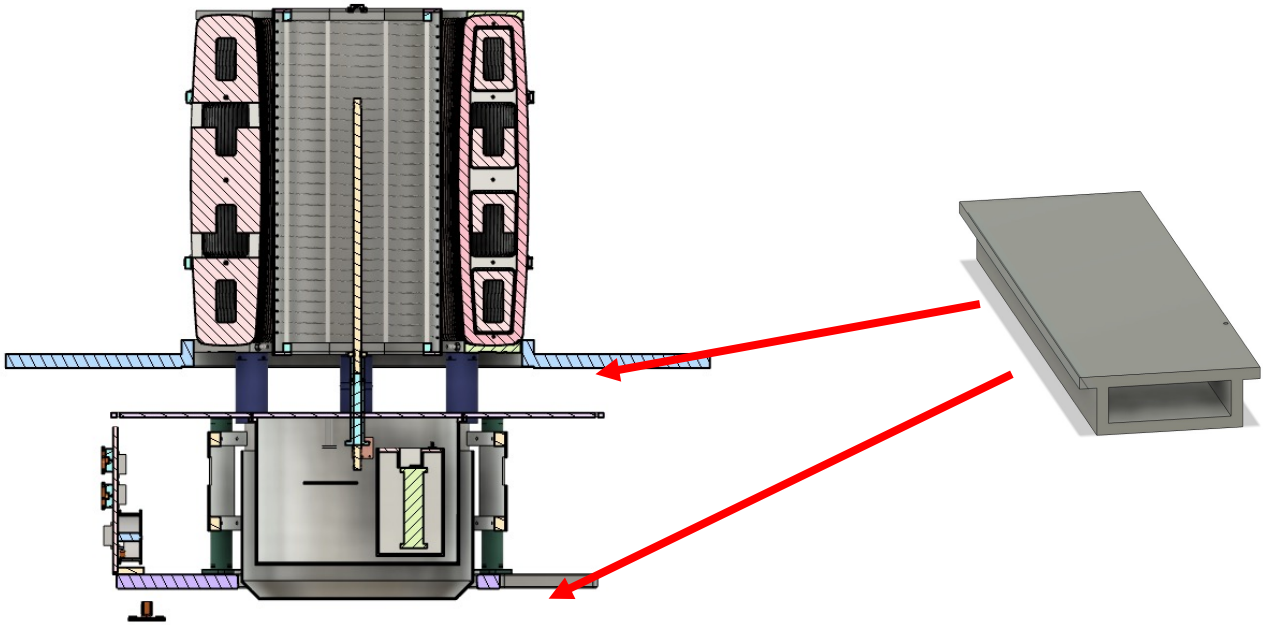


Attachments

- Purpose: to hold the lifter’s forks (and the full-assembly) in place
- Mount onto gliders and 4 K ring, fastened with M6 bolts



Attachments



Lifter

- Commercial lifters (i.e., lift stackers) seem like the best option
- Requirements:
  - Movable forks
  - Separation between lifting forks > width of magnet
  - Smooth up-down movement (electronic controls)
  - Fork length > diameter of 1 K plate
  - Rated for >> weight of magnet
- Have identified a few models that satisfy these requirements

Some options:

Fully Powered Stacker - 62" Lift

More Images & Video

ELECTRIC

Move and lift pallets in distribution centers and big box stores.

- Compact 54" turning radius.
- 700-watt drive motor, 2,000-watt lift motor.
- 24" load center accommodates pallets up to 48".
- Legs adjust from 38" to 52" to fit most pallets.
- 4 hours service per charge: two 12-volt, 75 Ah rechargeable batteries with built-in charger.
- Smooth rolling polyurethane wheels. 180° steering arc.

PRESTO

MODEL NO.	FORK SIZE L x W	LOAD CAPACITY	HEIGHT LOWERED	HEIGHT RAISED	WHEEL DIAMETER	WT. (LBS.)	PRICE EACH	ADD TO CART
H-3936	42 x 13-27"	2,200 lbs.	2 5/8"	5' 2"	10" / 4"	1,200	$7,835	1 ADD

DROP SHIPS IN 2 DAYS FROM AR

https://www.uline.com/Product/Detail/H-3936/Stackers-and-Positioners/Fully-Powered-Stacker-62-Lift

Semi-Electric Straddle Stacker - 63" Lift

More Images & Video

MANUAL PUSH/POWERED LIFT

Goes where forklifts can't. Use in small warehouses and loading docks.

- **Manually push stacker into position. Use motor to raise and lower forks.**
- 24" load center accommodates pallets up to 48".
- Legs adjust from 36 1/2" to 48 1/2" to fit most pallets.
- 2 hours service per charge. 12-volt, 150 Ah rechargeable battery with built-in charger.
- 7" polyurethane rear swivel casters. 5" polyurethane front rigid casters.
- 180° steering arc.
- 58" turning radius.
- View video.

https://www.uline.com/Product/Detail/H-5439/Stackers-and-Positioners/Semi-Electric-Straddle-Stacker-63-Lift

Open questions

- How, exactly, do we do the transfer from support point at bracket -> support point at 4 K ring?
  - Option 1: attach cage onto 4 K ring and use crane
  - Option 2: use 8020's to make a platform to support the 4 K ring during the transfer

Open questions

- How, exactly, do we do the transfer from support point at bracket -> support point at 4 K ring?
  - Option 1: ~~attach cage onto 4 K ring and use crane~~
  - Option 2: use 8020's to make a platform to support the 4 K ring during the transfer
- Do we want a secondary lifting platform to hold things (such as 20 mK assembly) in place as they are attached onto the setup?
- Are there any issues with adding holes onto the bottom bracket and 4 K ring (for attachment)?

(Tentative) Schedule

- First design and general discussion with collaboration (8/6)
- Design revisions as we get more information on the questions above (8/7-8/28)
- Discussion with collaboration on Thursday interface meeting (8/29)
- More design revisions (8/30-9/18)
- Final design discussion at the Thursday meeting (9/19)
- One week to make any necessary adjustments to the final design (9/19-9/26)
- Obtain quotes from Fictiv and Xometry (9/27-10/4)
- Place order for manufacturing (10/5)